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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* MIROSLAV NOVAK,
ALBERT REGNER, and ROMAN RUBAS

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Appeal 2015-007229[1]
Application 12/862,216[2]
Technology Center 3600

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Before: PHILIP J. HOFFMANN, BRADLEY B. BAYAT, and MATTHEW S. MEYERS, *Administrative Patent Judges*.

MEYERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1–10, 12–15, 17, and 19–28. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] Our decision references Appellants' Appeal Brief ("Appeal Br.," filed February 18, 2015) and Reply Brief ("Reply Br.," filed July 30, 2015), the Examiner's Answer ("Ans.," mailed June 4, 2015), and Final Office Action ("Final Act.," mailed September 26, 2014).

[2] Appellants identify Hewlett-Packard Development Company, LP, as the real party in interest (Appeal Br. 1).

## CLAIMED INVENTION

Appellants' claims relate to "a visualization technique and tool that enable real-time and interactive visualization of the architectures of software systems that have complex organizational structures" (Spec. ¶ 20).

Claims 1, 9, and 15 are the independent claims on appeal. Claim 1, reproduced below, with added bracketed notations and paragraphing, is illustrative of the subject matter on appeal:

> 1. A system to generate a layered visualization of a software system, the system comprising:
>
> [a] a storage device to store a model of a software system, the model defining a plurality of entities of the software system and relationships among the entities;
>
> [b] at least one processor; and
>
> [c] a visualization tool executable on the at least one processor to:
>
> [d] generate nodes representing the entities of the software system model;
>
> [e] assign the generated nodes to layers in a set of ordered layers in accordance with rules associated with the layers to generate a layered layout, including the layers, of the software system, wherein the assigning includes evaluating, for a given one of the nodes, the rules and determining that the given node satisfies a particular one of the rules, the given node being assigned to the layer associated with the particular rule;
>
> [f] render an interactive visualization of the layered layout for display;
>
> [g] receive importance levels for respective ones of the nodes, wherein at least two of the importance levels are different; and
>
> [h] group at least some of the nodes into a group node in the interactive visualization according to the importance levels of the nodes.

REJECTIONS

Claims 1–3, 9, 13, 15, and 20–28 are rejected under 35 U.S.C. § 103(a) being unpatentable over Kumar et al. ("Organizing UML Class Diagrams in Layers," 2005, Information and Communications Technology, Enabling Technologies for the New Knowledge Society: ITI 3rd Int. Conf., pp. 39–55.) and Pich (US 2010/0063785 A1, pub. Mar. 11, 2010).

Claims 4–8, 10, 12, 14, 17, and 19 are rejected under 35 U.S.C. § 103(a) being unpatentable over Kumar, Pich, and Chedgey (US 2008/0104570 A1, pub. May 1, 2008).

ANALYSIS

*Independent claim 1 and dependent claims 2–8, 21, 23, and 27*

We are persuaded by Appellants' argument that the Examiner erred in rejecting independent claim 1 under 35 U.S.C. § 103(a) because the combination of Kumar and Pich does not disclose or suggest "receiv[ing] importance levels for respective ones of the nodes, wherein at least two of the importance levels are different" and "group[ing] at least some of the nodes into a group node in the interactive visualization according to the importance levels of the nodes," as recited by limitations [g] and [h], respectively (*see* Appeal Br. 6–9; *see also* Reply Br. 1–8).

The Examiner maintains that the rejection is proper, and cites Pich as disclosing the argued limitations (*see* Final Act. 8 (citing Pich ¶¶ 36, 70; Fig. 5)); *see also* Ans. 3–9 (citing Pich ¶¶ 36, 70). However, we agree with Appellants that there is nothing in the cited portions that discloses or suggests the argued limitations.

Pich is directed to "[a] graph processing module is described for visualizing relationships among components" (Pich, Abs.). Pich discloses "[a]n importance analysis module **112**" that "determines the importance of components in the software system" (*id.* ¶ 36). More particularly, Pich discloses

> the goal of the importance analysis is to enable the graph processing module **104** to present a visualization of the graph G in which important components are positionally separated from unimportant components (where the relative difference in importance between components determines how far the components are placed from one another[)].

(*Id.*). Pich further discloses

> [t]he component-level analysis refers to analysis performed on the graph G on a component-level basis, as opposed to analysis performed on a group-level basis (to be discussed below). The component-level analysis is biased by the group results, meaning that the grouping information is used to influence the component-level analysis performed on the graph G.

(*Id.* ¶ 44). Pich also discloses that "the group results refer to any kind of results that are derived based on the graph information and the grouping information" (*id.* ¶ 43), and "the importance values identify the relative importance of the coalesced group nodes (e.g., group nodes Q, R, and S) in the group-level graph $G_g$" (*id.* ¶ 62). More particularly, Pich discloses

> the group-level importance values calculated in block **506** operate to bias the component-level probability values calculated in block **508**. For example, if a particular group is determined to be relatively important in block **506** (as in the above example of group S), the component level analysis performed in block **508** for the nodes in the important group will receive a boost relative to the nodes of other (less important) groups.

(*Id.* ¶ 68). Pich further discloses "generating group results based on the graph information and the grouping information; in other words, the group-

level importance values constitute the group results. Block **508** involves using the group-level importance values to calculate the importance values for each node in the component level graph G" (*id.* ¶ 70).

The difficulty with the Examiner's analysis, as Appellants point out, is that

> the grouping of the nodes that is performed as part of the coalescing of step 404 (and thus also step 504) in Pich is based on "grouping information." *See, e.g., id.*, ¶¶ [0029], [0043]. There is no teaching or hint anywhere in Pich that the coalescing of nodes of the component-level graph G to form a smaller number of nodes in the group-level graph $G_g$ is according to **importance levels** of nodes. In fact, as further depicted in Fig. 5 of Pich, the importance values for nodes as determined in steps 506 and 508 are performed **after the coalescing** of nodes performed at step 504 in Fig. 5 of Pich. What this means is that **after** grouping (coalescing) nodes to form the group-level graph of Pich, the **importance values for nodes are determined** in steps 506 and 508 in Fig. 5 of Pich.

(Appeal Br. 7–8). In this regard, we note the cited portions of Pich relate to "importance values identify[ing] the relative importance of the coalesced group nodes (e.g., group nodes Q, R, and S) in the group-level graph $G_g$" (Pich ¶ 62), but do not disclose or suggest "receiv[ing] importance levels for respective ones of the nodes, wherein at least two of the importance levels are different," as recited by limitation [g], and then "group[ing] at least some of the nodes into a group node in the interactive visualization according to the importance levels of the nodes," as recited by limitation [h].

Responding to Appellants' argument in the Answer, the Examiner takes the position

> [t]he disclosure in paragraph 0036 and FIG. 5 of Pich, of "important components are positionally separated from unimportant components," demonstrates that "at least some of

> the nodes" in Pich are grouped according to importance level. Paragraph 0070 of Pich, also applied in the Final Rejection on pages 7–8, also states that block 508 of FIG. 5 involves calculating the importance values for each node. Thus, despite Appellants' arguments, importance values are used in grouping at least some of the nodes in Pich.

(Ans. 4; *see also id.* at 5–9). However, we agree with Appellants that "**separating** (or more specifically, positionally separating) important components from unimportant components does not provide any teaching or hint of **grouping** nodes **into a group node** according to the importance levels of the nodes, as recited in claim 1" (Reply Br. 4). In this regard, Pich discloses "if a particular group is determined to be relatively important in block **506** (as in the above example of group S), the component level analysis performed in block **508** for the nodes in the important group will receive a boost relative to the nodes of other (less important) groups" (Pich ¶ 68 (emphasis added); *see also id.* Fig. 5). Thus, we fail to see, and the Examiner does not adequately explain, how Pich's disclosure regarding "important components are positionally separated from unimportant components" (*see* Ans. 4–9 (citing Pich ¶ 36)) discloses or suggests "receiv[ing] importance levels for respective ones of the nodes, wherein at least two of the importance levels are different," as recited by limitation [g] of claim 1, and then "group[ing] at least some of the nodes into a group node in the interactive visualization according to the importance levels of the nodes," as recited by limitation [h] of the claim. The Examiner does not rely on Kumar to address the argued limitations (*see* Final Act. 6).

In view of the foregoing, we do not sustain the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a). For the same reasons, we

also do not sustain the Examiner's rejections of claims 2–8, 21, 23, and 27 that depend from claim 1.

*Independent claims 9 and 15, and dependent claims 10, 12–14, 17, 19, 20, 22, 24–26, and 28*

Each of independent claims 9 and 15 includes limitations similar to limitations [g] and [h] in independent claim 1, and is rejected based on the same rationale applied with respect to independent claim 1 (*see* Final Act. 10–18). Thus, for the same reasons, we also do not sustain the Examiner's rejection of independent claims 9 and 15 under 35 U.S.C. § 103(a). For the same reasons, we do not sustain the Examiner's rejections of claims 10, 12–14, 17, 19, 20, 22, 24–26, and 28, which depend from independent claims 9 and 15.

## DECISION

The Examiner's rejections of claims 1–10, 12–15, 17, and 19–28 under 35 U.S.C. § 103(a) are not sustained.

## REVERSED